

Alg. 2 Warm Up #12-3

1. Factor completely:

a) $6x^2 - 54$

b) $x^2 + 14x + 49$

Week 12 Classwork:

Warm Up

4- # 47 ---> 49a (yellow)

4- # 58 ---> 63

(with white resource pg.)

Factor

1) $5x^7y^3 - 30x^5y$

2) $5x^2 - 45$

3) $16xy^5 + 2x^8y^2 - 4x^6y$

4) $81x^2 - 100y^2$

5) $x^2 + 24x + 144$

6) $2x^2 - 9x + 7$

7) $3x^2 - 2x - 1$

8) $2x^2 - 10x + 8$

HW Questions:

4-72. Graph the four inequalities below on the same set of axes.

i. $2y \geq x - 3$

ii. $x - 2y \geq -7$

iii. $y \leq -2x + 6$

iv. $-9 \leq 2x + y$

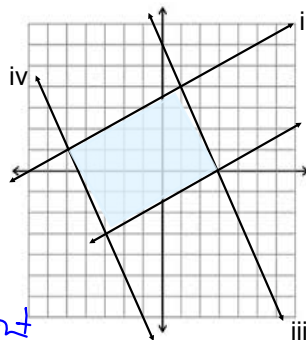
- a. What type of polygon is formed by the solution of this set of inequalities? Write a convincing argument to justify your answer.
- b. Find the vertices of the polygon. If your graph is very accurately drawn you will be able to determine the points from the graph. If it is not, you will need to solve the systems (pairs) of equations that represent the corners of your graphs.

x-int: $2(0) = x - 3$
 $+3 \quad +3$
 $x = 3$

y-int $2y = 0 - 3$
 $y = -\frac{3}{2}$

shading: pick a test point

test $(0,0) \rightarrow 2(0) \geq 0 - 3$

 $0 \geq -3$ yes so shade that side.

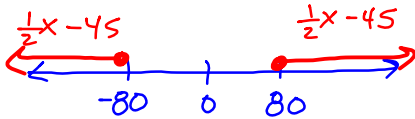
4-73. Solve the following absolute value inequalities.

a. $|x - 4| < 9$

b. $|\frac{1}{2}x - 45| \geq 80$

c. $|2x - 5| \leq 2$

Means: $\frac{1}{2}x - 45$ is more or = to 80 units away from zero



$$\begin{array}{lcl} \frac{1}{2}x - 45 \leq -80 & \text{or} & \frac{1}{2}x - 45 \geq 80 \\ +45 & & +45 \\ \frac{1}{2}x \leq -35 & & \frac{1}{2}x \geq 125 \\ \hline x \leq -70 & \text{or} & x \geq 250 \end{array}$$

4-74. Your family plans to buy a new air conditioner. They can buy the Super Cool X1400 for \$800, or they can buy the Efficient Energy X2000 for \$1200. Both models will cool your home equally well, but the Efficient Energy model is less expensive to operate. The Super Cool X1400 will cost \$60 per month to operate, while the Efficient Energy X2000 costs only \$40 per month to operate.



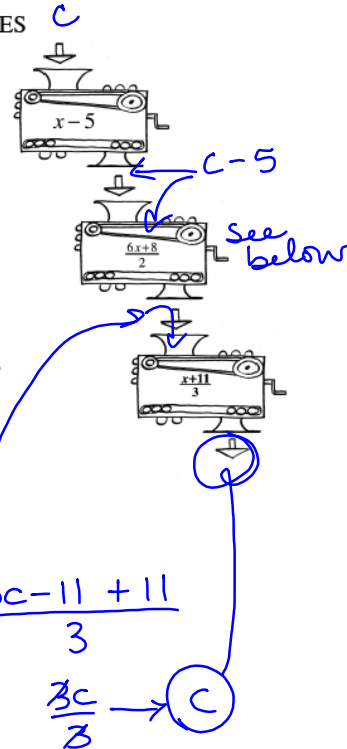
- Write an equation to represent the cost of buying and operating the Super Cool X1400 where C = cost and m = months.
- Write an equation to represent the cost of buying and operating the Efficient Energy X2000.
- How many months would your family have to use the Efficient Energy model to compensate for the additional cost of the original purchase?
- Figuring your family will only use the air conditioner for 4 months each year, how many years will you have to wait to start saving money overall?

4-75. MARVELOUS MARK'S FUNCTION MACHINES

Mark has set up a series of three function machines that he claims will surprise you.

- a. Try a few numbers. Are you surprised by your results?

- b. Carrie claims that she was not surprised by her results. She also says that she can show why the sequence of machines does what it does by simply dropping in a variable and writing out step-by-step what happens inside each machine. Try it. (Use something like c or m .) Be sure to show all of the steps.



4-76. Multiply or divide the rational expressions below. Write each answer in simplified form.

a. $\frac{(x-3)}{2x-1} \cdot \frac{2x-1}{(3x-14)(x+6)} \cdot \frac{x+6}{x-3}$

$$\frac{x-3}{3x-14}$$

b. $\frac{4x^2+5x-6}{3x^2+5x-2} \div \frac{4x^2+x-3}{6x^2-5x+1}$

$$\frac{(4x-3)(x+2)}{(3x-1)(x+2)} \cdot \frac{(3x-1)(2x-1)}{(4x-3)(x+1)}$$

$$\frac{(3x-1)(2x-1)}{(3x-1)(x+1)}$$

$$\frac{2x-1}{x+1}$$

- 4-77. Find all of the points at which the parabolas below intersect. Write your solution(s) in (x, y) form.

$$2x^2 + 3x + 7 = x^2 - x + 12$$

$$y = x^2 - x + 12$$

$$x^2 + 4x - 5 = 0$$

$$y = 2x^2 + 3x + 7$$

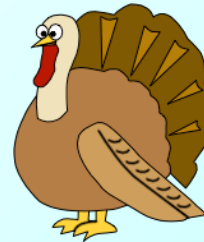
$$(x+5)(x-1) = 0 \rightarrow (-5,) \text{ \& } (1,)$$

Now plug those in to find y's

- 4-78. Find the equation (in $y = mx + b$ form) of each line described below.

- A line with slope $\frac{1}{2}$ passing through the point $(6, 1)$.
- The line $y = 2x + b$ passing through the point $(1, 4)$.

HW: 4-



84, 87, 88, 92, 96,

99, 101, 102, 104, 105

and Final Exam Rev. WS #1

Suggestions to prepare for the final:

1) Make an outline of what we have learned. Carefully rewrite your notes, paying attention to important vocabulary and processes. Think about what you are writing and make a note on a separate piece of paper anything you need to practice or need to ask about.

→ For Monday

2) Practice things that were weak for you. Find similar problems on your past homework, classwork or warm ups. ★

3) Redo the closure sections for each chapter.